

SHARP 20LK61M SERVICE MANUAL

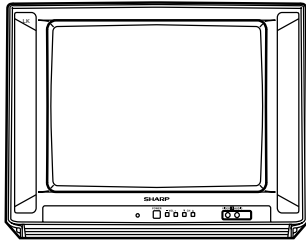


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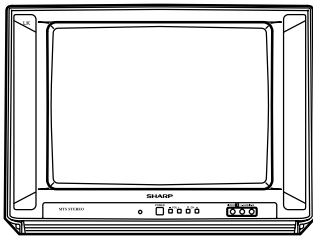
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SHARP SERVICE MANUAL

S80G420LK31M/



20LK31M



20LK61M

COLOR TELEVISION
Chassis No. SN-70A

20LK31M
20LK61M
MODELS

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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ELECTRICAL SPECIFICATIONS

POWER INPUT	110-220 V AC 50/60 Hz
POWER RATING	
20LK31M	88 W
20LK61M	98 W
PICTURE SIZE	1,194cm ² (185sq inch)
CONVERGENCE	Magnetic
SWEEP DEFLECTION	Magnetic
FOCUS	Hi-Bi-Potential Electrostatic
INTERMEDIATE FREQUENCIES	
Picture IF Carrier Frequency	45.75 MHz
Sound IF Carrier Frequency	41.25 MHz
Color Sub-Carrier Frequency	42.17 MHz
	(Nominal)
AUDIO POWER	
OUTPUT RATING	
20LK31M	1.5W (at 10% distortion)
20LK61M	3.0W (at 10% distortion)

SPEAKER	
SIZE	9 cm × 5 cm
VOICE COIL IMPEDANCE	
20LK31M	16 ohm at 400 Hz
20LK61M	32 ohm at 400 Hz
ANTENNA INPUT IMPEDANCE	
VHF/UHF	75 ohm Unbalanced
TUNING RANGES	
VHF-Channels	2 thru 13
UHF-Channels	14 thru 69
CATV Channels	1 thru 125

Specifications are subject to change without prior notice.

IMPORTANT SERVICE SAFETY PRECAUTION

■ **Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:**

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulating material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit. The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation, if the high voltage is as specified in the "High Voltage Check" instructions.
It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in the glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter.
The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value -no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also, under certain conditions, may produce radiation in exceeding of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

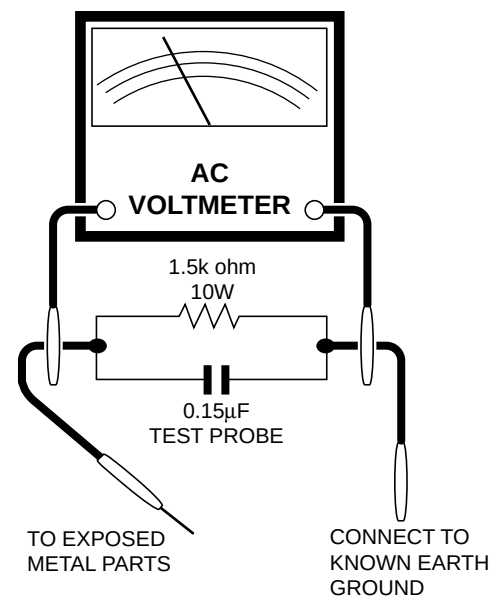
Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators and etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.
 - Plug the AC cord directly into a 120 volt AC outlet, (Do not use an isolation transformer for this test).
 - Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15mF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
 - Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.

- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon and etc.) and measure the AC voltage drop across the resistor.

All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)

Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above indicate of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



SAFETY NOTICE

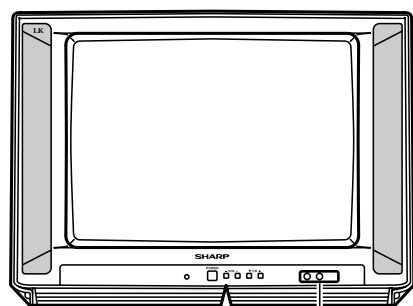
Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

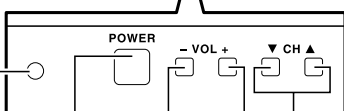
LOCATION OF USER'S CONTROL

Front Panel

20LK31M



VIDEO/AUDIO-
IN TERMINALS



POWER

Press → On.
Press again → Off.

CHANNEL UP/DOWN

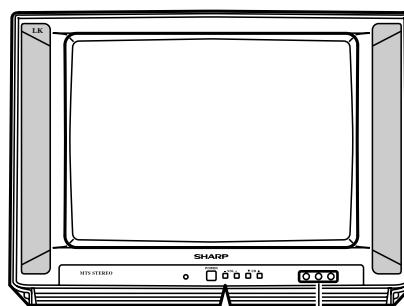
(▲) Selects next higher channel.
(▼) Selects next lower channel.

VOLUME UP/DOWN

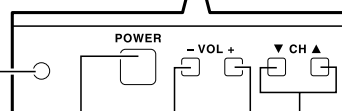
(+) Increases sound.
(-) Decreases sound.

SENSOR AREA FOR
REMOTE CONTROL

20LK61M



VIDEO/AUDIO-
IN TERMINALS



POWER

Press → On.
Press again → Off.

CHANNEL UP/DOWN

(▲) Selects next higher channel.
(▼) Selects next lower channel.

VOLUME UP/DOWN

(+) Increases sound.
(-) Decreases sound.

SENSOR AREA FOR
REMOTE CONTROL

Basic Remote Control Functions

POWER

Press → On.
Press again → Off.

REMOTE KEYPAD

Accesses any channel from keypad.

FLASHBACK

Returns to previous channel.

VOLUME UP/DOWN

(+) Increases sound.
(-) Decreases sound.
• In menu mode, changes or selects the TV adjustments.

MUTE

Press → Mutes sound.
Press again → Restores sound.
• CLOSED CAPTION appears when sound is muted.

Infrared Transmitter Window

INPUT

Press → Switch to external video input mode.
Press again → Switch to TV mode.

CHANNEL UP/DOWN

(▲) Selects next higher channel.
(▼) Selects next lower channel.

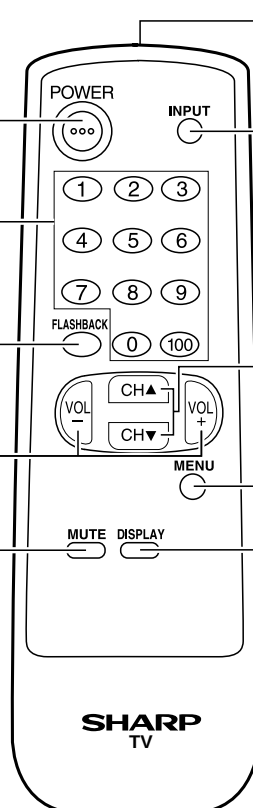
• Moves the "◆" mark of the MENU screen.

MENU

Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

DISPLAY

Press → Displays receiving channel for 4 seconds.
Press again → Removes display.
• Temporarily displays receiving channel when in Closed Caption mode.



INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdrivers or TV alignment tools.
(2) Before performing adjustments, the TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 4.0A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, B+ system, test the X-Radiation protection circuit to ascertain proper operation as follows:

1. Apply 120V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and adjust all customer controls for normal picture and sound.
3. Receive a good local channel.
4. Connect a digital voltmeter to TP653 and make sure that the voltmeter reads $21.3 \pm 1.5V$.
5. Apply external 27.2V DC at TP653 by using an external DC supply, TV must be shut off.
6. To reset the protector, unplug the AC cord and make a short circuit between TP651 and TP652. Now make sure that normal picture appears on the screen.
7. If the operation of the horizontal oscillator does not stop in step 5, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of picture tube.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with a strong air signal or a properly tuned in test signal.
3. Enter the service mode and select the service adjustment "S03" and Bus data "01" (Y-mute on).
4. The voltage should be approximately, 26.0kV (at zero beam).

If a correct reading cannot be obtained, check circuitry for malfunctioning components. After the voltage test, make Y-mute off to the normal mode.

For adjustments of this model, the bus data is converted to various analog signals by the D/A converter circuit.

Note: There are still a few analog adjustments in this series such as focus and master screen voltage. Follow the steps below whenever the service adjustment is required.

To enter the service mode and exit service mode.

While pressing the Vol-up and Ch-up buttons at the sametime, plug the AC cord into a wall socket.

Now, the TV set is switched on and enters the service mode.

To exit the service mode, turn the television off by pressing the power button.

1. Service mode.

Before putting unit into the service mode, check that customer adjustments are in the normal mode. Use the reset function in the video adjustment menu to ensure customer control are in their proper (reset) position.

2. Service number selection.

In the service mode, you will see the window screen as window ①. There are 3 adjustment categories ②DEF, ③SIGNAL, ④FIX VALUE as show in **Figure A**.

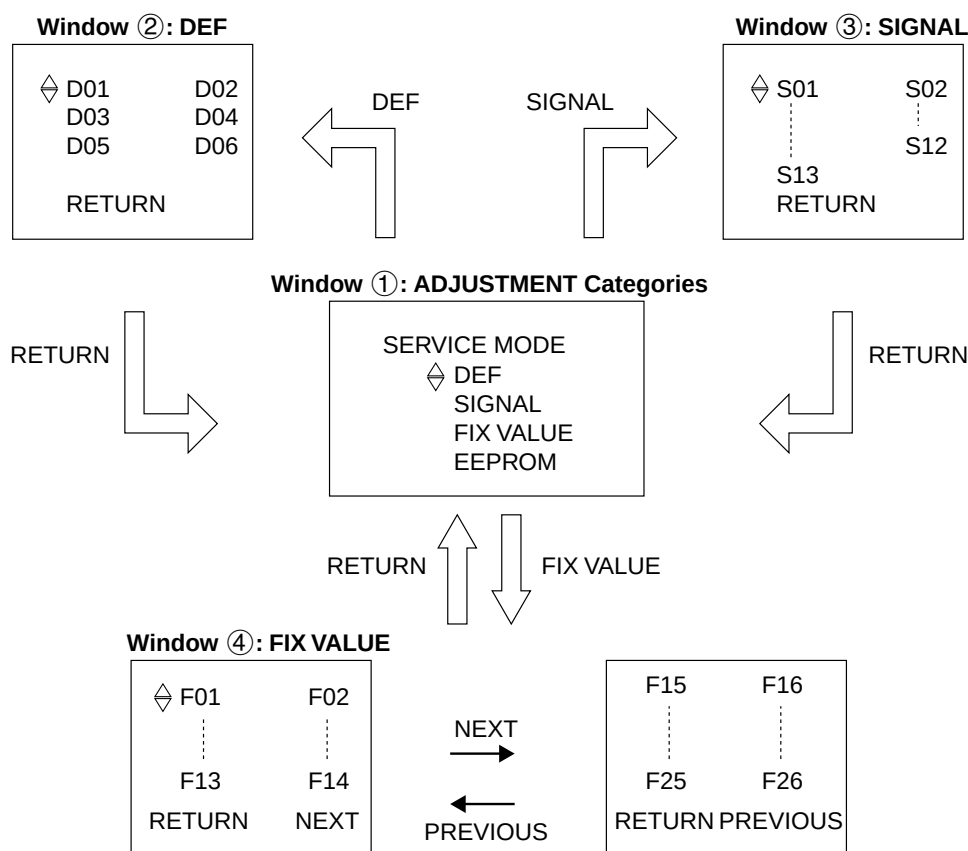


Figure A: Adjustment Categories

Press CH UP/DOWN button for selection and enter by VOL UP or VOL DOWN.

Press CH UP/DOWN button to select the adjustment item and VOL UP/DOWN to adjust the data number for each categories.

(OSD disturbance can be erased by R/C display key)

(Note: EEPROM – factory used only)

Below are the adjustments ranges and initial values for FIX VALUE category.

FIX VALUE

SERVICE POSITION	ADJUST ITEM	DATA			SERVICE POSITION	ADJUST ITEM	DATA		
		RANGE	INITIAL VALUE	(Hex)			RANGE	INITIAL VALUE	(Hex)
F01	OPTION 1	00-FF	B0	A0	F14	OSD CONT	00-03	02	01
F02	OPTION 2	00-FF	04	0C	F15	SHARPNESS	00-3F	19	19
F03	E-SAVE	00-3F	23	1F	F16	FLT SYS	00-07	00	00
F04	TUNER SETUP	00, 01	00	00	F17	KILLER OP	00-07	04	02
F05	R-TONE RD	00-7F	19	03	F18	PRE SHOOT	00-03	03	00
F06	R-TONE BD	00-7F	00	7C	F19	CORING	00-03	04	04
F07	B-TONE RD	00-7F	00	00	F20	DC REST	00-03	02	02
F08	B-TONE BD	00-7F	12	04	F21	BS START	00-03	01	01
F09	FM LEVEL	00-1F	0C	0C	F22	BS GAIN	00-03	01	01
F10	AFC GAIN	00, 01	00	00	F23	ABL START	00-07	00	00
F11	G DRIVE	00, 0F	00	0F	F24	R/B ANGLE	00-0F	08	08
F12	FBT BLK SW	00,01	01	01	F25	H BLK R	00-0F	04	03
F13	V COMP	00-07	07	07	F26	H BLK L	00-0F	04	06

Table - A

Below are the ranges and initial values for each adjustment and in each categories.

DEF

SERVICE POSITION	ADJUST ITEM	DATA		ADJUSTMENT CONTENTS
		RANGE	INITIAL VALUE	
D01	H-PHASE	00-1F	0C	
D02	V-SIZE	00-7F	40	
D03	V-POSITION	00-3F	20	Must be "20"
D04	CC-POSITION	00-FF	1A	
D05	V-LINEARITY	00-1F	10	Must be "12"
D06	V-S-CORRECTION	00-1F	10	Must be "0F"

Table - B

SIGNAL

SERVICE POSITION	ADJUST ITEM	DATA		ADJUSTMENT CONTENTS
		RANGE	INITIAL VALUE	
S01	RF AGC	00-3F	14	
S02	VIDEO LEVEL	00-07	03	
S03	Y-MUTE	00-03	00	"01":Y-MUTE, "02":V-STOP&Y-MUTE "03":Activate color killer circuit
S04	SUB BIAS	00-FF	40	Must be "30"
S05	R-BIAS	00-FF	00	
S06	G-BIAS	00-FF	00	
S07	B-BIAS	00-7F	00	
S08	R-DRIVE	00-7F	40	
S09	B-DRIVE	00-7F	40	
S10	CONTRAST	00-7F	5A	
S11	TINT	00-7F	40	
S12	COLOR	00-7F	40	
S13	BRIGHTNESS	00-7F	40	

Note: Refer to the SERVICE ADJUSTMENT for each corresponding values.

Table - C

Holding down both the Vol-up/Ch-down buttons on the TV set at service mode for more than 2 seconds will automatically write the above initial values into IC2101.

PART REPLACED	ADJUSTMENT		NOTES
	NECESSARY	UNNECESSARY	
IC2001		X	Data is stored in IC2101.
IC201	X		The adjustment is needed to compensate for characteristics of parts including IC201.
IC2101	X		Holding down both the Vol-up/Ch-down buttons on the TV set in the service mode for more than 2 seconds will automatically write the above initial values into IC2101.
CRT	X		Adjust items related to picture tube only.

Table - D

■ SERVICE ADJUSTMENT

RF AGC Adjustment

1. Receive a good local channel.
2. Enter the service mode signal category and select the service adjustment "S01".
3. Set the data value to point where no noise or beat appears.
4. Select another channel to confirm that no noise or beat appears.

Note: You have to exit the service mode first to select another channel.

Video Level (TV Det Video Level) Adjustment

1. Receive a good local channel.
2. Enter the service mode signal category and select the service adjustment "S02".
3. Set the data value to "02" first, then adjust the data in ranges 02 ± 2 step to obtain a normal contrast level.

Screen Adjustment

1. Connect to oscilloscope probe between TP855 and ground of the CRT unit.
2. Receive a good local channel.
3. Enter the service mode Signal category and set the service adjustment "S04" to step 30. Then select the service adjustment "S12" and set the data value to "00" to set the color level to the minimum level. (record the original data first). You may skip this step, if you selected a B/W picture or monoscope pattern. Set also the "S05/S06/S07" data to minimum level.
4. Select the service adjustment "S03" and set the data value to "01" to turn off the luminance signal (Y-mute).
5. Select the service adjustment "S13" and adjust the data value to obtain 2.35 volts as shown in **Figure B**.
6. Adjust the master screen control until the raster darkens to the point where raster is barely seen.
7. Adjust the service adjustment "S05" red, "S06" green and "S07" blue to obtain a good grey scale with normal white at low brightness level.
8. Select the service a adjustment "S03" and reset data to "00". Select the service adjustment "S12" and reset data to obtain normal color level.
9. Remove probe and reset the master screen control to obtain normal brightness range.

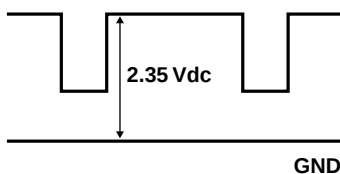


Figure B: Waveform for Screen Adjustment

White Balance Adjustment.

1. Receive a good local channel.
2. Select the service adjustment "S12" and set the data value to "00" to set the color level to the minimum. You may skip this step, if you selected a B/W picture or monoscope.
3. Alternately adjust the service adjustment data of "S08" and "S09" until a good grey scale with normal white is obtained.
4. Select the service adjustment "S12" and reset data to obtain normal color level.

Sub-Picture Adjustment

1. Receive a good local channel.
2. Make sure the customer picture control is set to maximum.
3. Enter the service mode and select the service adjustment "S10".
4. Adjust the data value to achieve normal contrast range.

Sub-Tint Adjustment

1. Receive a good local channel.
2. Set the customer tint control to the center of it's range.
3. Enter the service mode and select the service adjustment "S11".
4. Adjust "S11" data value to obtain normal fresh tones.

Sub-Color Adjustment

1. Receive a good local channel.
2. Make sure the customer color control is set to center position.
3. Enter the service mode and select the service adjustment "S12".
4. Adjust "S12" data value to obtain normal color level.

Sub-Brightness Adjustment

1. Receive a good local channel.
2. Make sure the customer brightness control is set to center position.
3. Enter the service mode and select the service adjustment "S13".
4. Adjust "S13" data value to obtain normal brightness level.

Vertical-Size, V-Linearity and V-S Correction Adjustments

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D02" for Vertical Size, "D05" for V-Linearity and "D06" for V-S Correction Adjustment.
3. Set in order "D05" for V-Linearity, "D06" for V-S Correction and set the data to get the best linearity.
4. Then adjust "D02" data until it become a proper vertical size.

Horizontal Position Adjustment

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D01".
3. Adjust "D01" data value to center the picture.

Vertical-Phase Adjustment

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D03".
3. Adjust "D03" bus data to get the most acceptable vertical position.

Note: The step range is 20 (032) ± 10 steps.

Caption Position Adjustment (Horizontal)

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D04".
3. A black text box will appear on the screen. (see **Figure C.** below)
4. Adjust "D04" data value to balance the text box position in the center. (A=B).

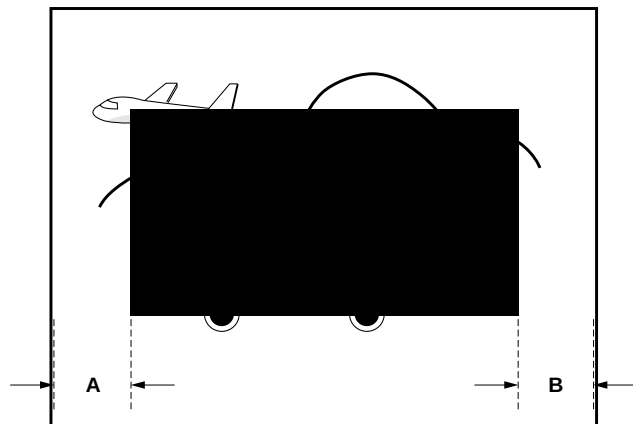


Figure C.

■ MTS ADJUSTMENT

MTS Level Adjustment

1. Feed the following monaural signal to pin (14) of IC3001.
Monaural signal: 300Hz, 245mVrms
2. Connect the rms voltmeter to pin (39) of IC3001.
3. Enter the service mode and select the service adjustment "M01".
4. Adjust the data so that the rms voltmeter reads 490 ± 10 mVrms.

MTS VCO Adjustment

1. Keep the unit in no-signal state.
2. Connect the frequency counter to pin (39) of IC3001.
3. Connect a capacitor (100 μ F, 50V) in between positive(+) side of C3005 and ground.
4. Enter the service mode and select the service adjustment "M02".
5. Adjust the data so that the frequency counter reads 62.94 ± 0.75 kHz.

Filter Adjustment

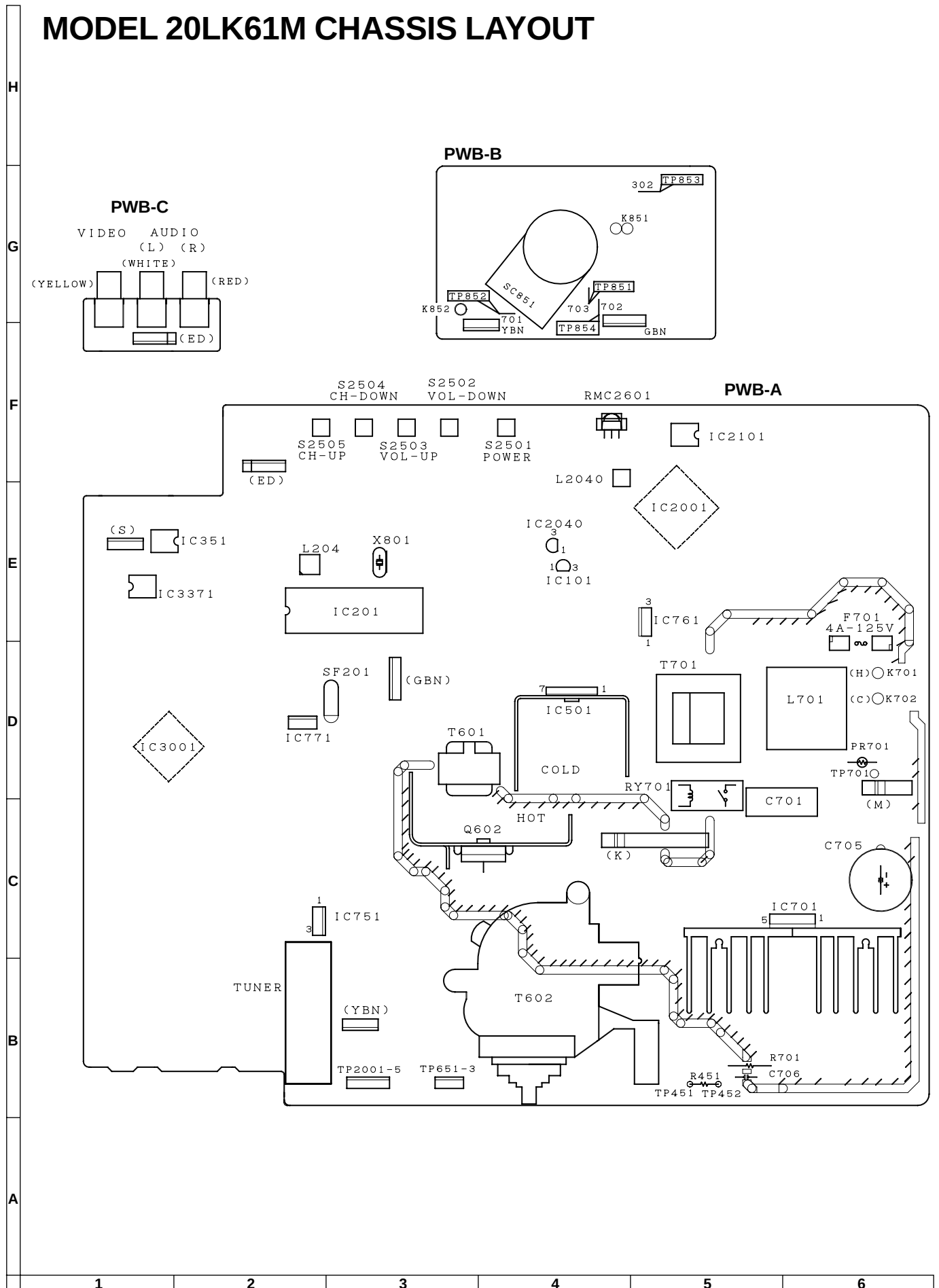
1. Feed the following stereo pilot signal to pin (14) of IC3001 .
Stereo pilot signal: 9.4kHz, 600mVrms.
2. Enter the service mode and select the service adjustment "M03".
3. Adjust the data at the point where "OK" appears on the screen. The "OK" represents the approximate center of the adjustable range of the data.

Separation Adjustment

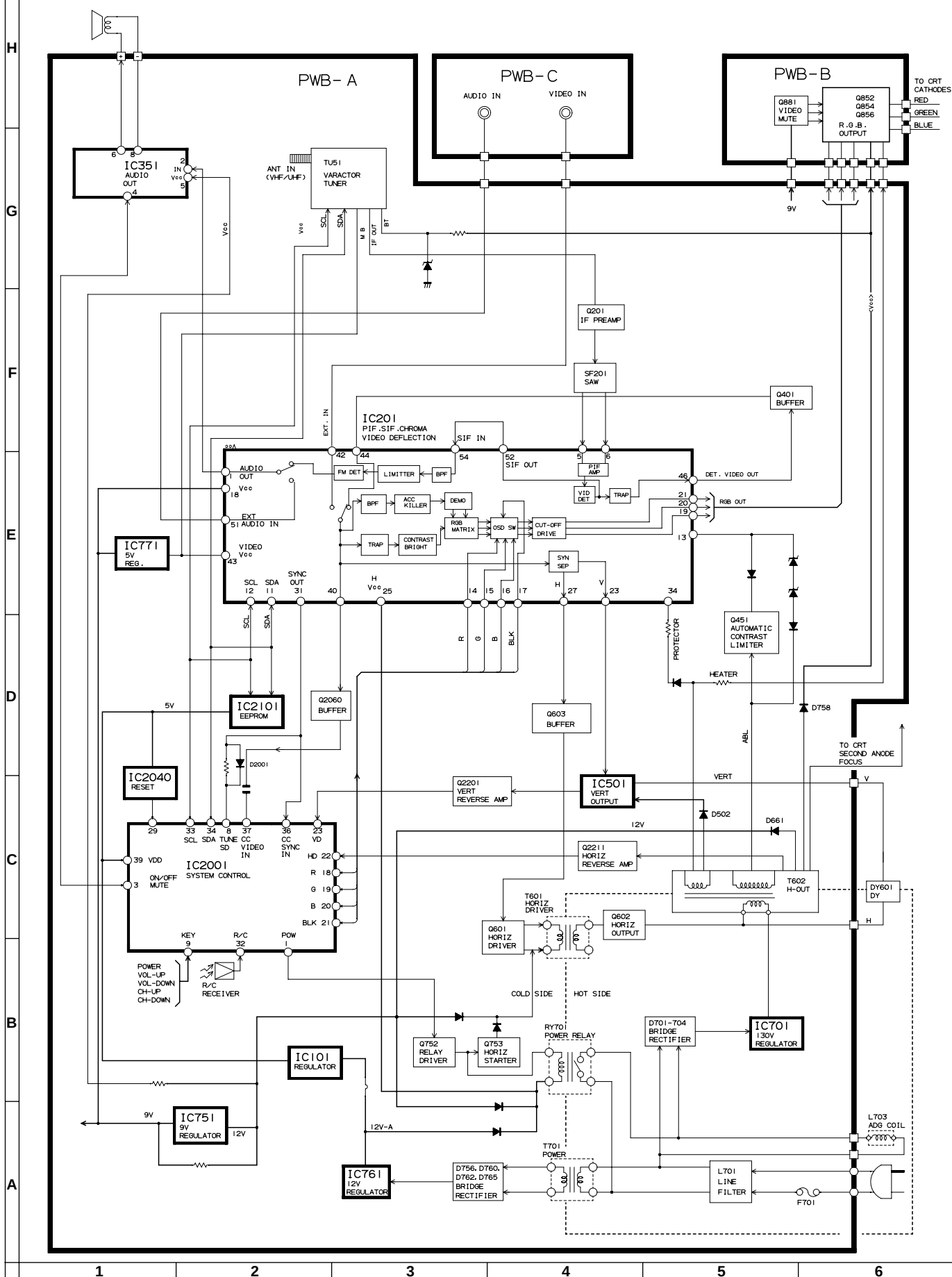
1. Connect the rms voltmeter to pin (39) of IC3001.
2. Receive the following composite stereo signal 1.
Composite stereo signal: 30% modulation, left channel only, noise reduction on, 300Hz
3. Enter the service mode and select the service adjustment "M04".
4. Adjust the data until the AC voltage reading of the rms voltmeter is minimum.
5. Receive the following composite stereo signal 2.
Stereo signal: 30% modulation, left channel only, noise reduction on, 3kHz
6. Enter the service mode and select the service adjustment "M05".
7. Adjust the data until the AC voltage reading of the rms voltmeter is minimum.
8. Take the above steps 1 thru 7 again for fine adjustment.



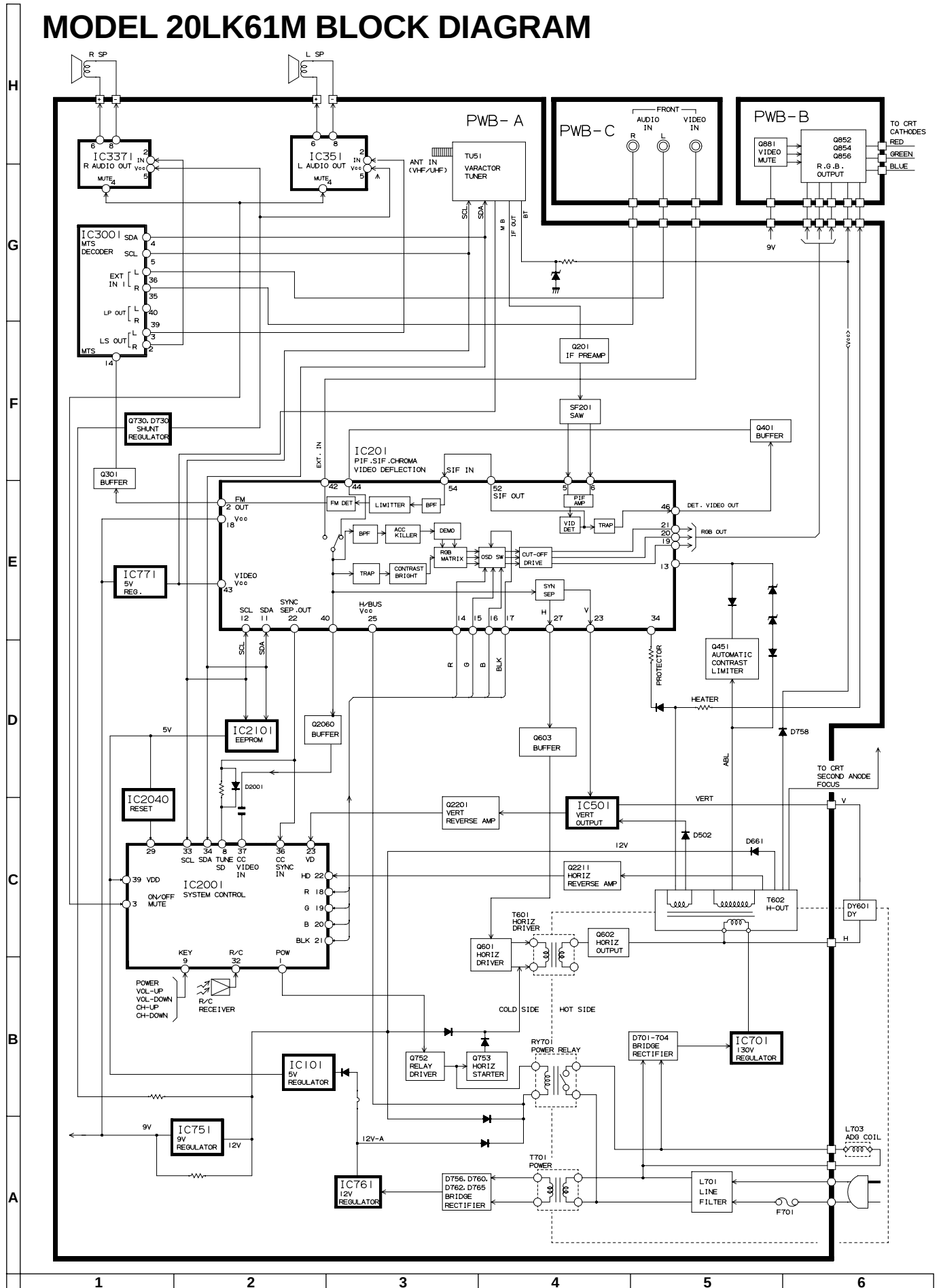
MODEL 20LK61M CHASSIS LAYOUT



MODEL 20LK31M BLOCK DIAGRAM



MODEL 20LK61M BLOCK DIAGRAM



DESCRIPTION OF SCHEMATIC DIAGRAM

NOTES:

1. The unit of resistance "ohm" is omitted.
($K=k\Omega=1000\Omega$, $M=M\Omega$)
2. All resistors are 1/16 watt, unless otherwise noted.
3. All capacitors are μF , unless otherwise noted.
($P=pF=\mu\mu F$)
4. (G) indicates $\pm 2\%$ tolerance may be used.
5. $\overline{\text{---}}$ indicates line isolated ground.

VOLTAGE MEASUREMENT CONDITIONS:

1. All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.
2. All voltages measured with 1000 μ V B & W or Color signal.

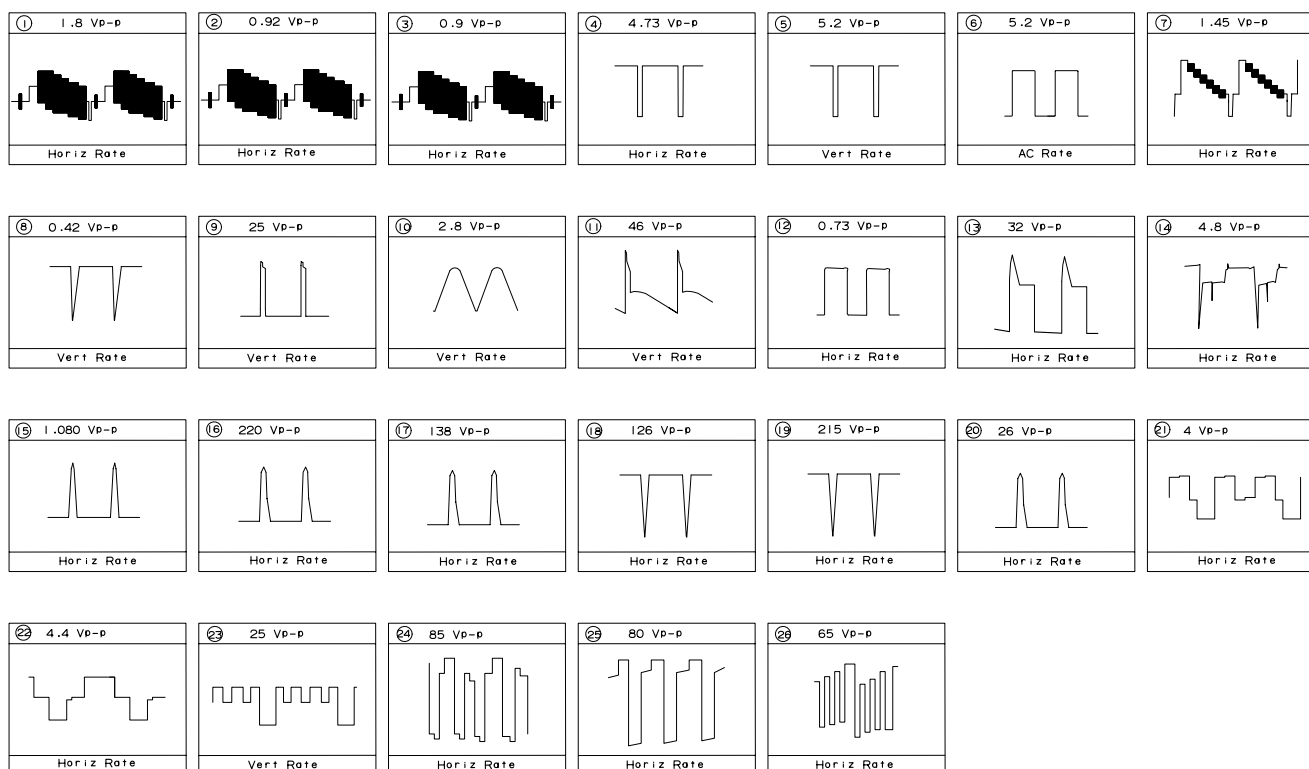
WAVEFORM MEASUREMENT CONDITIONS:

1. Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.
2. $\bigcirc$ indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)

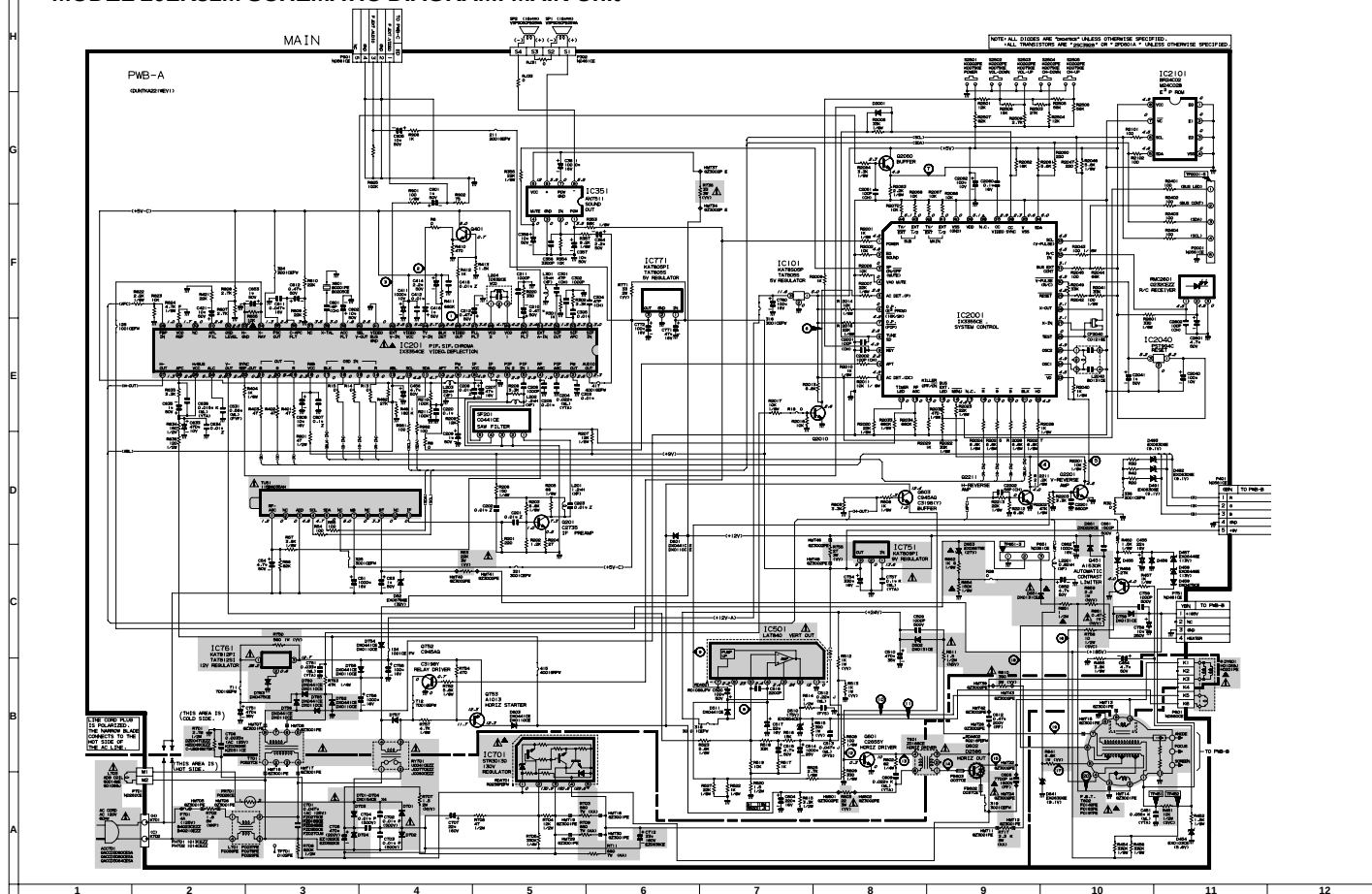
$\triangle$ AND SHADED () COMPONENTS = SAFETY RELATED PARTS.
 $\blacktriangle$ MARK= X-RAY RELATED PARTS.

This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

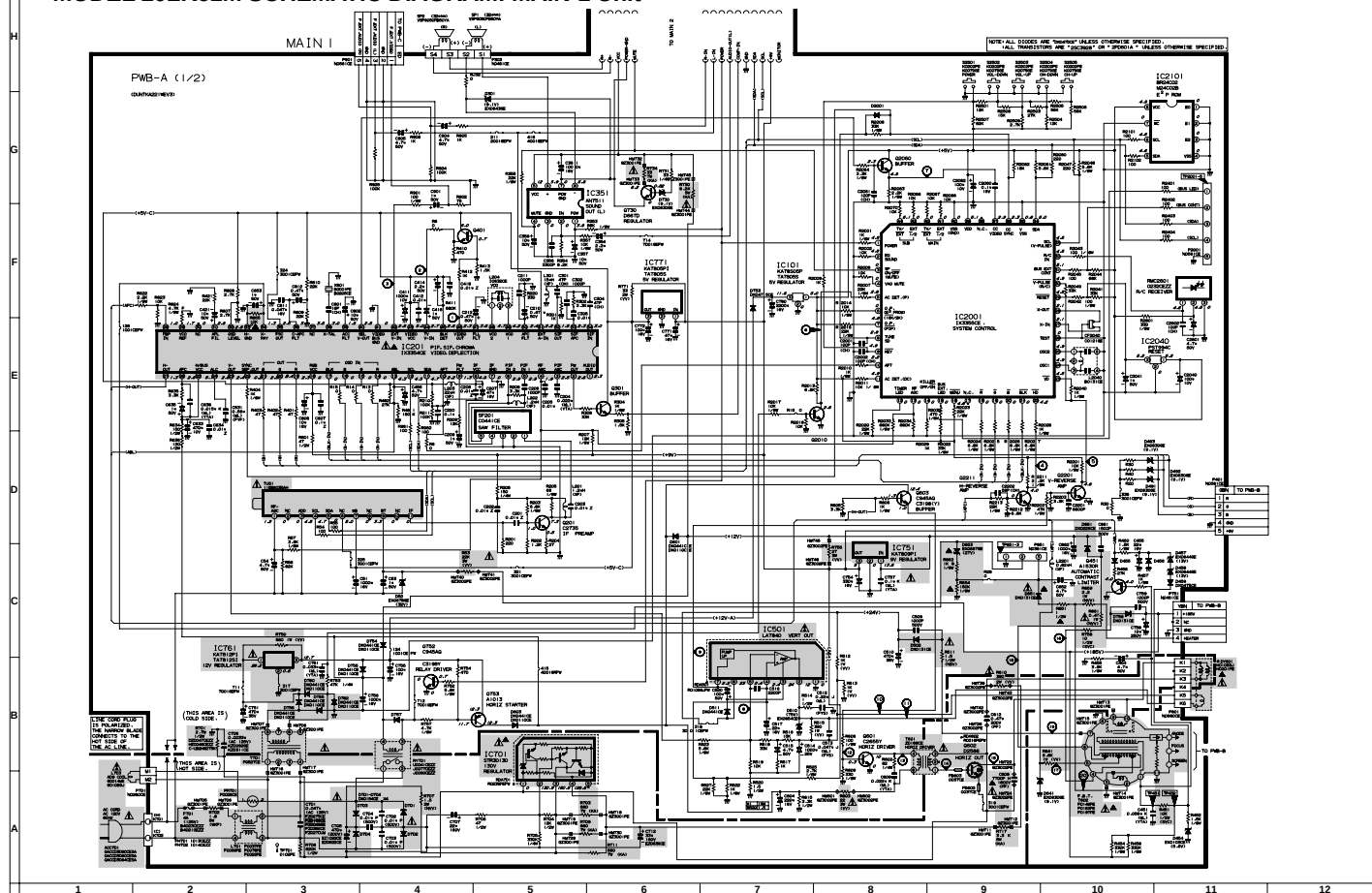
WAVEFORMS



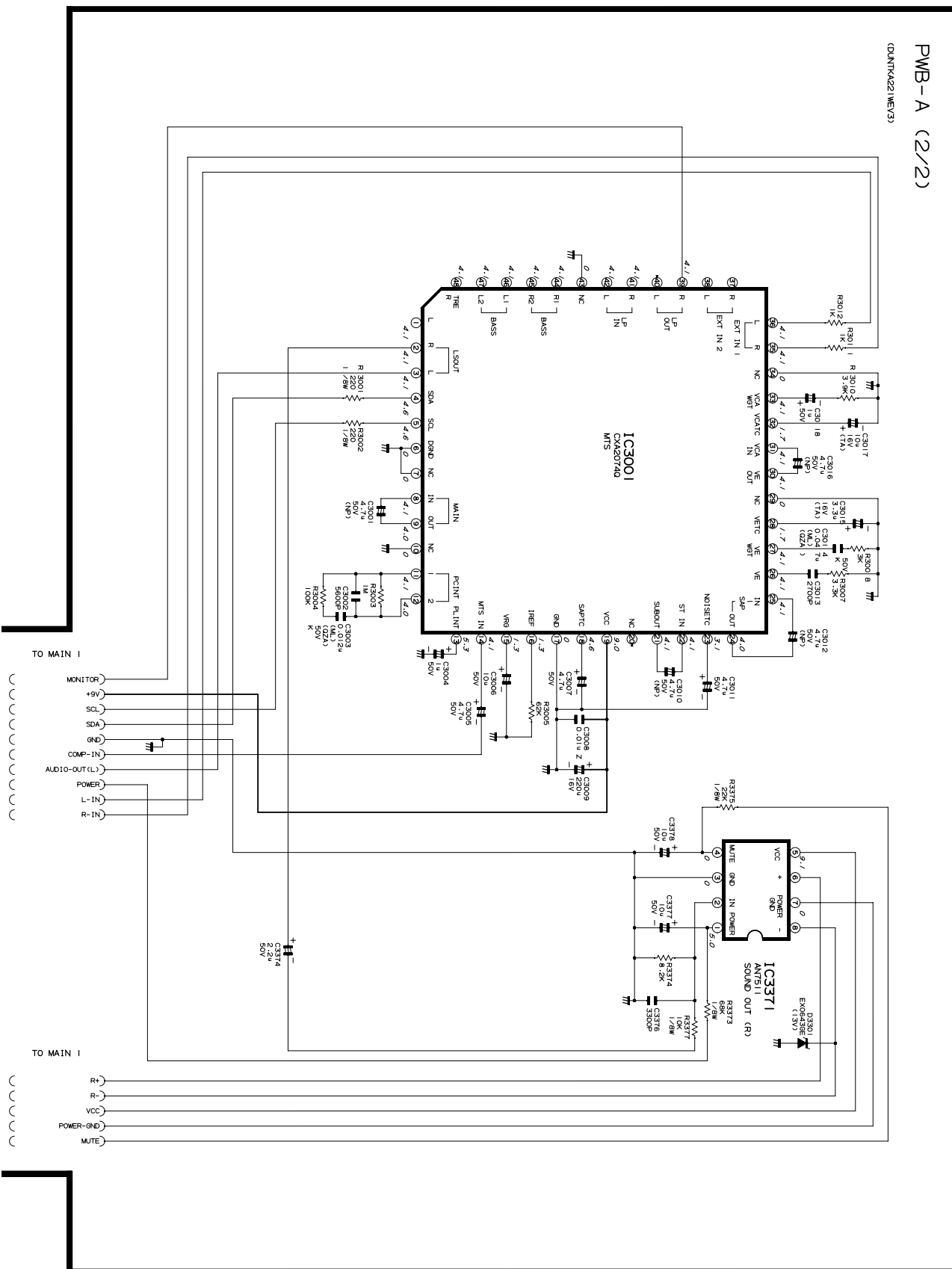
MODEL 20LK31M SCHEMATIC DIAGRAM: MAIN Unit

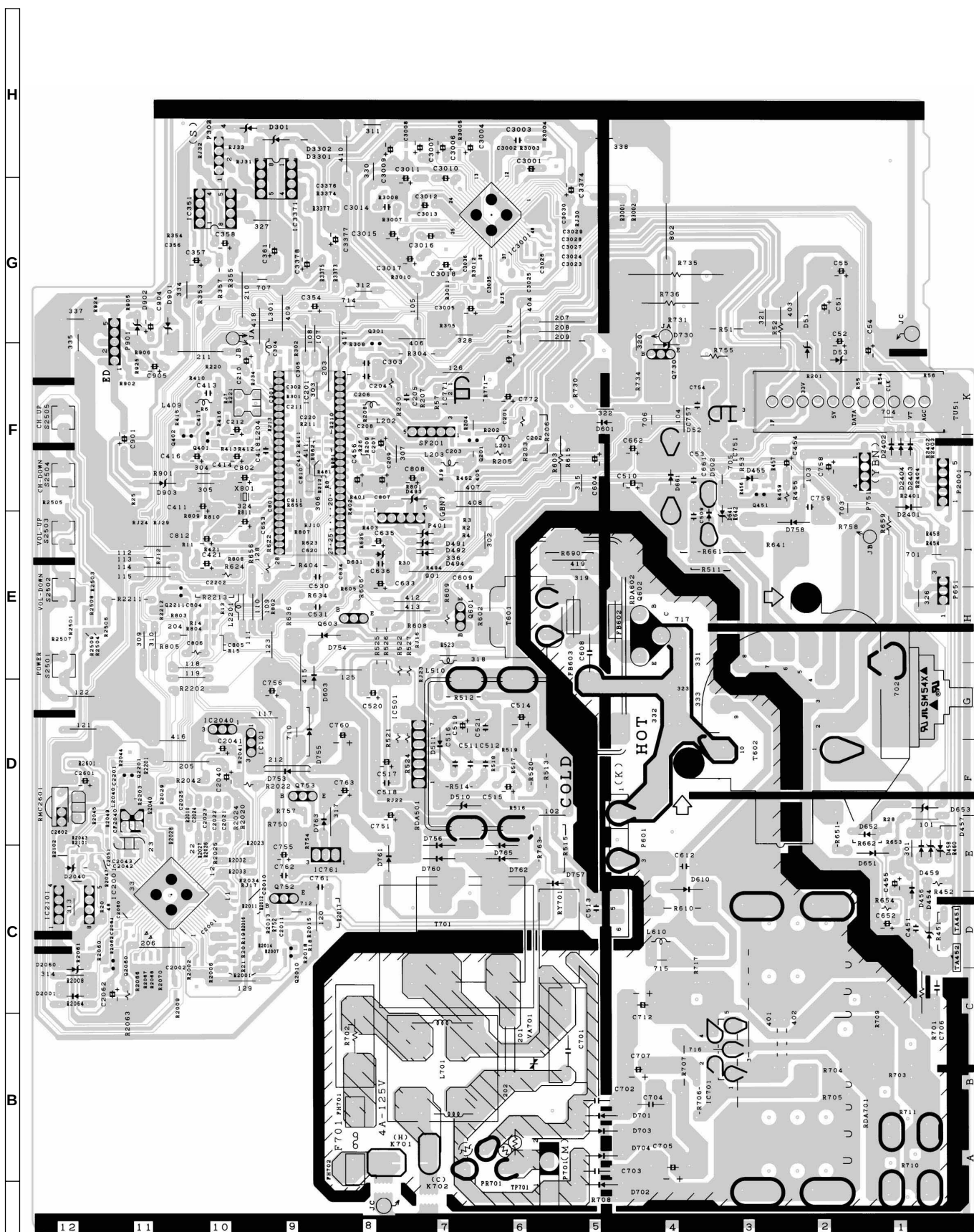


MODEL 20LK61M SCHEMATIC DIAGRAM: MAIN-1 Unit

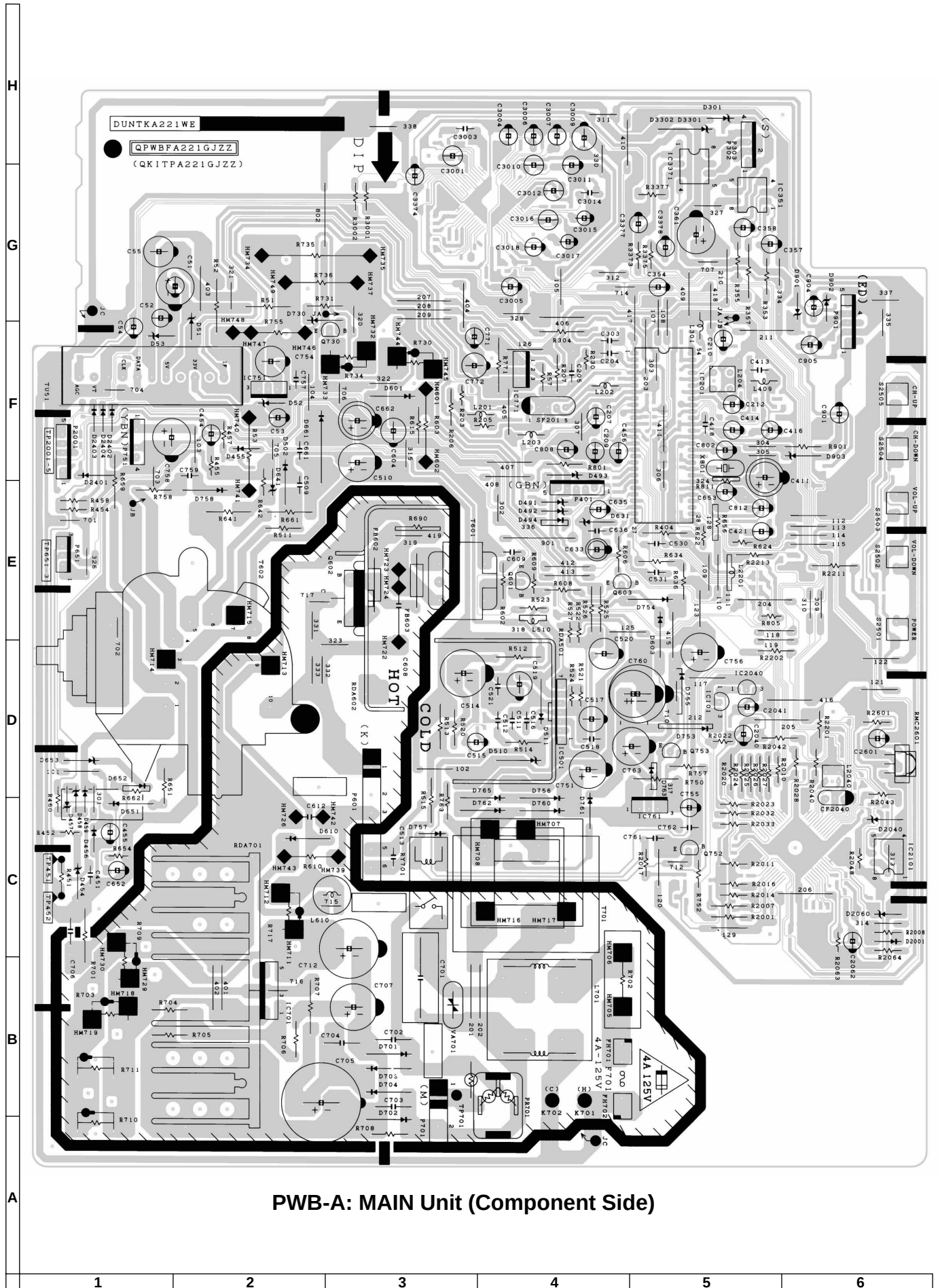


MAIN2





PWB-A: MAIN Unit (Wiring Side)



PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by Δ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

- | | |
|-----------------|----------------|
| 1. MODEL NUMBER | 2. REF. NO. |
| 3. PART NO. | 4. DESCRIPTION |

★MARK : SPARE PARTS-DELIVERY SECTION

▲MARK : X- RAY RELATED PARTS

Ref. No.	Part No.	★	Description	Code
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PICTURE TUBE

▲ Δ V101	VB48KZL70X/*S	X	CRT (DY: H0106GJ or H0201PE)	BY
	VB48JLL40X/*S		CRT (DY: H0106GJ or H0201PE)	
	VB48AFS15X/*S		CRT (DY: H0106GJ or H0201PE)	
▲ Δ DY601	RCiLH0106GJZZ	J	DY (CRT: A48AFS15X or A48KZL70X or A48JLL40X)	AZ
	RCiLH0201PEZZ	DY	(CRT: A48AFS15X or A48KZL70X or A48JLL40X)	AZ
	PMAGF3045CEZZ	J	Magnet	AG
▲ L703	QEARC2016PEZZ	R	Grounding Strap	AG
	RCiLG0014MEZZ	X	Degaussing Coil	AR
	RCiLG0108GJZZ			

	CRT	DY
COMBI- NATION	A48AFS15X	H0106GJ or H0201PE
	A48KZL70X	
	A48JLL40X	

PRINTED WIRING BOARD ASSEMBLIES (NOT REPLACEMENT ITEM)

PWB-A DUNTKA221WEV1	—	Main Unit (20LK31M)	—
PWB-A DUNTKA221WEV3	—	Main Unit (20LK61M)	—
PWB-B DUNT9432WEV1	—	CRT Unit	—
PWB-C DUNTKA222WEV0	—	Front AV Unit (20LK31M)	—
PWB-C DUNTKA222WEV2	—	Front AV Unit (20LK61M)	—

Ref. No. Part No. ★ Description Code

PWB-A: DUNTKA221WEV1 (20LK31M)

PWB-A: DUNTKA221WEV3 (20LK61M)

MAIN UNIT

TUNER

NOTE : THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.

▲ Δ TU51	VTU115B8035AH	X	Tuner	AZ
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INTEGRATED CIRCUITS

IC101	VHiKA78S05P-1	J	KA78S05P	AD
	or			
	VHiTA7805S/-1			
▲ Δ IC201	RH-iX3354CEZZ	J	LA76843	AT
	IC351 VHiAN7511/-1	J	AN7511	AK
▲ Δ IC501	VHiLA7840/-1	J	LA7840	AR
▲ Δ IC701	VHiSTR301301E	J	STR30130	AP
▲ Δ IC751	VHiKA7809Pi-1	R	KA7809PI	AE
▲ Δ IC761	VHiKA7812Pi-1	R	KA7812PI	AE
	or			
	VHiTA7812Si-1			
IC771	VHiKA7805Pi-1	R	KA7805PI	AE
	or			
	VHiTA7805S/-1			
IC2001	RH-iX3355CEN2	J	TMPA8700CPF166	AU
IC2040	VHiPST994C/-1	J	PST994C	AD
IC2101	VHiBR24C02/-1	X	BR24C02	AH
	or			
	VHiM24C02B/-1			
IC3001	VHiCXA2074Q-1	J	CXA2074Q (20LK61M)	AY
IC3371	VHiAN7511/-1	J	AN7511 (20LK61M)	AK

TRANSISTORS

You can substitute "VS2PD601AR/-1" for "VS2SC3928R/-1".

Q201	VS2SC2735//1E	J	2SC2735	AC
Q301	VS2SC3928R/-1	J	2SC3928R (20LK61M)	AB
Q401	VS2SC3928R/-1	J	2SC3928R	AB
Q451	VS2SA1530R/-1	J	2SA1530R	AB
Q601	VS2SC2655Y/-1	J	2SC2655Y	AE
▲ Q602	VS2SD2586//1E	J	2SD2586	AM
Q603	VS2SC945AQ/-1	J	2SC945AQ	AB
	or			
	VS2SC3198-Y-1			
Q730	VS2SD667D//1	J	2SD6670D (20LK61M)	AE
Q752	VS2SC945AQ/-1	J	2SC945AQ	AB
	or			
	VS2SC3198-Y-1			
Q2060	VS2SC3928R/-1	J	2SC3928R	AB
Q2201	VS2SC3928R/-1	J	2SC3928R	AB
Q2211	VS2SC3928R/-1	J	2SC3928R	AB

DIODES

D52	RH-EX0676GEZZ	J	Zener Diode, 32V	AA
D301	RH-EX0643GEZZ	J	Zener Diode, 13V (20LK61M)	AB
D454	RH-EX0103CEZZ	J	Zener Diode, 5.6V	AB
D455	RH-DX0475CEZZ	J	Diode	AB
D456	RH-DX0475CEZZ	J	Diode	AB
D457	RH-EX0644GEZZ	J	Zener Diode, 13V	AB
D458	RH-EX0644GEZZ	J	Zener Diode, 13V	AB
D459	RH-DX0475CEZZ	J	Diode	AB
D491	RH-EX0630GEZZ	J	Zener Diode, 9.1V	AA
D492	RH-EX0630GEZZ	J	Zener Diode, 9.1V	AA
D493	RH-EX0630GEZZ	J	Zener Diode, 9.1V	AA
▲ D502	RH-DX0131CEZZ	J	Diode	AC
D510	RH-EX0654CEZZ	J	Zener Diode, 75V	AD
D511	RH-DX0441CEZZ	J	Diode	AC
D601	RH-DX0441CEZZ	J	Diode	AC
	or			
	RH-DX0110CEZZ			
D603	RH-DX0441CEZZ	J	Diode	AC
	or			
	RH-DX0110CEZZ			
D641	RH-EX0630GEZZ	J	Zener Diode, 9.1V	AA
▲ Δ D651	RH-DX0131CEZZ	J	Diode	AC
▲ Δ D653	RH-EX0667GEZZ	J	Zener Diode, 27V	AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTKA221WEV1 (20LK31M)									
PWB-A: DUNTKA221WEV3 (20LK61M)									
MAIN UNIT (Continued)									
△ D661	RH-DX0229CEZZ	J	Diode	AF	C204	VCQYTA1HM223K	J	0.022 50V	Mylar AB
△ D701	RH-DX0154CEZZ	J	Diode	AC	C205	VCKYPA1HB103K	J	0.01 50V	Ceramic AA
△ D702	RH-DX0154CEZZ	J	Diode	AC	C206	VCKYCY1HB102K	J	1000p 50V	Ceramic AA
△ D703	RH-DX0154CEZZ	J	Diode	AC	C207	VCEA0A1CW476M	J	47 16V	EL. AB
△ D704	RH-DX0154CEZZ	J	Diode	AC	C208	VCKYCY1HF103Z	J	0.01 50V	Ceramic AA
D730	RH-EX0630GEZZ	J	Zener Diode, 9.1V (20LK61M)	AA	C209	VCEA0A1HW105M	J	1.0 50V	EL. AB
D753	RH-DX0475CEZZ	J	Diode (20LK61M)	AB	C210	VCEA0A1HW474M	J	0.47 50V	EL. AB
D754	RH-DX0441CEZZ	J	Diode	AC	C211	VCKYCY1HB102K	J	1000p 50V	Ceramic AA
	or				C212	VCEA0A1HW474M	J	0.47 50V	EL. AB
D755	RH-DX0110CEZZ	J	Diode	AC	C220	VCKYCY1CB104K	J	0.1 16V	Ceramic AB
	or				C301	VCCCCY1HH470J	J	47p 50V	Ceramic AA
△ D756	RH-DX0441CEZZ	J	Diode	AC	C302	VCKYCY1HB102K	J	1000p 50V	Ceramic AA
	or				C303	VCKYPA1HB103K	J	0.01 50V	Ceramic AA
D757	RH-DX0475CEZZ	J	Diode	AB		(20LK31M)			
△ D758	RH-DX0131CEZZ	J	Diode	AC	C304	VCCCCY1HH470J	J	47p 50V	Ceramic AA
△ D760	RH-DX0441CEZZ	J	Diode	AC	C305	VCKYCY1HB103K	J	0.01 50V	Ceramic AA
	or				C354	VCEA0A1HW225M	J	2.2 50V	EL. AB
△ D762	RH-DX0441CEZZ	J	Diode	AC	C356	VCKYCY1HB332K	J	3300p 50V	Ceramic AA
	or				C357	VCEA0A1HW106M	J	10 50V	EL. AB
D763	RH-DX0475CEZZ	J	Diode (20LK31M)	AB	C358	VCEA0A1HW106M	J	10 50V	EL. AB
△ D765	RH-DX0441CEZZ	J	Diode	AC	C361	VCEA0A1CW108M	J	1000 16V	EL. AD
	or				C411	VCEA0A1AW108M	J	1000 10V	EL. AC
D2001	RH-DX0475CEZZ	J	Diode	AB	C412	VCKYCY1HB103K	J	0.01 50V	Ceramic AA
D3301	RH-EX0643GEZZ	J	Zener Diode, 13V (20LK61M)	AB	C414	VCEA0A1HW225M	J	2.2 50V	EL. AB
PACKAGED CIRCUITS					C416	VCEA0A1HW105M	J	1.0 50V	EL. AB
△ PR701	RMPTP0026CEZZ	J	Packaged Circuit	AF	C418	VCKYPA1HF103Z	J	0.01 50V	Ceramic AA
X801	RCRSB0001PEZZ	R	Crystal	AL	C421	VCEA0A1HW106M	J	10 50V	EL. AB
CF2040	RFILC0121GEZZ	J	Ceramic Filter	AD	C451	VCQYTA1HM563K	J	0.056 50V	Mylar AB
SF201	RFILC0441CEZZ	J	SAW Filter	AH	C454	VCEA0A1HW475M	J	4.7 50V	EL. AB
COILS					C455	VCEA0A1CW226M	J	22 16V	EL. AB
L201	VP-XF1R2K0000	J	Peaking 1.2μH	AB	C456	VCEA0A1HW475M	J	4.7 50V	EL. AB
L202	VP-XF1R2K0000	J	Peaking 1.2μH	AB	C509	VCKYPA2HB102K	J	1000p 500V	Ceramic AA
L203	VP-XF220K0000	J	Peaking 22μH	AB	C510	VCEA0A1VW477M	J	470 35V	EL. AB
L204	RCiLi0632CEZZ	J	IF Coil	AE	C512	VCFYSA1JA224J	J	0.22 63V	Mylar AD
L301	VP-XF150K0000	J	Peaking 15μH	AB	C513	VCFYSA1JA473J	J	0.047 63V	Mylar AC
△ L701	RCiLF0069PEZZ	R	Coil	AG	C514	VCEA0A1EW108M	J	1000 25V	EL. AD
	or				C515	VCEA0A1HW475M	J	4.7 50V	EL. AB
	RCiLF0037PEZZ				C516	VCKYPA1HB222K	J	2200p 50V	Ceramic AA
	or				C517	VCEA0A1CW226M	J	22 16V	EL. AB
	RCiLF0078PEZZ				C520	VCEA0A1HW107M	J	100 50V	EL. AB
	or				C531	VCFYFA1HA564J	J	0.56 50V	Mylar AB
	RCiLF0029PEZZ				C604	VCEA0A1CW227M	J	220 16V	EL. AC
L2040	RCiLB0131CEZZ	J	Oscillation Coil	AE	△ C608	VCFPVC3CA772H	J	7700p 1.6kV	M-Poly. AE
L2201	VP-XFR82K0000	J	Peaking 0.82μH	AB	C609	VCQYTA1HM223K	J	0.022 50V	Mylar AB
TRANSFORMERS					C612	VCFPVC2DB474J	J	0.47 200V	M-Poly. AE
△ T601	RTRNZ0168CEZZ	J	Transformer	AH	C633	VCEA0A1AW477M	J	470 10V	EL. AC
△ T602	RTRNF0149PEZZ	R	H-Volt Transformer	BE	C634	VCKYCY1HF103Z	J	0.01 50V	Ceramic AA
	or				C635	VCEA0A1HW105M	J	1.0 50V	EL. AB
	RTRNF0163PEZZ				C636	VCQYTA1HM153K	J	0.015 50V	Mylar AA
	or				C652	VCEA0A1HW475M	J	4.7 50V	EL. AB
	RTRNF0197PEZZ				C653	VCEA0A1HW105M	J	1.0 50V	EL. AB
△ T701	RTRNP0527CEZZ	J	Power Transformer	AM	C661	VCKYPA2HB152K	J	1500p 500V	Ceramic AA
CAPACITORS					C662	VCEA0A1CW108M	J	1000 16V	EL. AD
[EL... Electrolytic, M-Poly... Metalized Polypro Film]					△ C701	RC-FZ027SCEZZ	J	0.047 275V	Mylar AD
C51	VCEA0A1CW108M	J	1000 16V EL.	AD		or			
C53	VCEA0A1HW105M	J	1.0 50V EL.	AB		RC-FZ015SCEZZ			
C54	VCEA0A1HW475M	J	4.7 50V EL.	AB		or			
C201	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA		RC-FZ004SGEZZ			
C202	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA		or			
C203	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA		RC-FZ035SCEZZ			
						or			
						RC-FZ027CUMZZ			
					C702	VCKYPB2HE103P	J	0.01 500V	Ceramic AB
					C703	VCKYPB2HE103P	J	0.01 500V	Ceramic AB
					C704	VCKYPB2HE103P	J	0.01 500V	Ceramic AB
					△ C705	RC-EZ1022CEZZ	J	470 200V	EL. AK
						or			
						RC-FZ0522CEZZ			
					△ C706	RC-KZ0092GEZZ	J	0.33 5.5V	Mylar AC
						or			
						RC-KZ0311CEZZ			
					C707	VCEA4A2CN226M	J	22 160V	EL. AD
					△ C712	RC-EZ0638CEZZ	J	33 160V	EL. AG
					C751	VCEA0A1VW477M	J	470 35V	EL. AB
					C754	VCEA0A1CW337M	J	330 16V	EL. AC
					C755	VCEA0A1CW107M	J	100 16V	EL. AC

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTKA221WEV1 (20LK31M)					PWB-A: DUNTKA221WEV3 (20LK61M)				
MAIN UNIT (Continued)									
C756	VCEA0A1CW108M	J	1000 16V EL.	AD	C3374	VCEA0A1HW225M	J	2.2 50V EL.	AB
C757	VCQYTA1HM104K	J	0.1 50V Mylar	AC				(20LK61M)	
C758	VCEA0A2EW106M	J	10 250V EL.	AD	C3376	VCKYCY1HB332K	J	3300p 50V Ceramic	AA
C759	VCKYPA2HB102K	J	1000p 500V Ceramic	AA				(20LK61M)	
C760	VCEA0A1CW107M	J	100 16V EL.	AC	C3377	VCEA0A1HW106M	J	10 50V EL.	AB
			(20LK31M)					(20LK61M)	
C760	VCEA0A1CW228M	J	2200 16V EL.	AD	C3378	VCEA0A1HW106M	J	10 50V EL.	AB
			(20LK61M)					(20LK61M)	
C761	VCQYTA1HM333K	J	0.033 50V Mylar	AA	RESISTORS				
C771	VCEA0A1CW476M	J	47 16V EL.	AB	<i>[M-Ox... Metal Oxide, M-Film... Metal Film]</i>				
C772	VCEA0A1CW107M	J	100 16V EL.	AC	RJ9	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C801	VCCCCY1HH160J	J	16p 50V Ceramic	AA	RJ10	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C802	VCEA0A1HW106M	J	10 50V EL.	AB	RJ12	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C807	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA	RJ16	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C808	VCEA0A1CW106M	J	10 16V EL.	AB	RJ17	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C811	VCKYCY1CB473K	J	0.047 16V Ceramic	AA	RJ22	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C812	VCEA0A1HW474M	J	0.47 50V EL.	AB	RJ23	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C901	VCEA0A1HW105M	J	1.0 50V EL.	AB	RJ24	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C904	VCEA0A1HW475M	J	4.7 50V EL.	AB	RJ29	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
			(20LK61M)		RJ31	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C905	VCEA0A1HW106M	J	10 50V EL.	AB	RJ33	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
			(20LK31M)		R2	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C905	VCEA0A1HW475M	J	4.7 50V EL.	AB	R3	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
			(20LK61M)		R4	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2001	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R6	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2002	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R7	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2040	VCEA0A1AW107M	J	100 10V EL.	AB	R8	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2041	VCEA0A1HW105M	J	1.0 50V EL.	AB	R13	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2060	VCKYCY1CB104K	J	0.1 16V Ceramic	AB	R14	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2061	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R15	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2062	VCEA0A1AW107M	J	100 10V EL.	AB	R18	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2201	VCKYCY1HB682K	J	6800p 50V Ceramic	AA	R20	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2202	VCCCCY1HH560J	J	56p 50V Ceramic	AA	R28	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2601	VCEA0A1HW475M	J	4.7 50V EL.	AB	R30	VRS-CY1JF000J	J	0 1/16W M-Ox.	AA
C2602	VCCCCY1HH101J	J	100p 50V Ceramic	AA	R53	VRS-VV3LB223J	J	22k 3.0W M-Ox.	AB
C3001	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB	R54	VRS-CY1JF101J	J	100 1/16W M-Ox.	AA
			(20LK61M)		R55	VRS-CY1JF101J	J	100 1/16W M-Ox.	AA
C3002	VCKYCY1HB562K	J	5600p 50V Ceramic	AA	R56	VRS-CY1JF823J	J	82k 1/16W M-Ox.	AA
			(20LK61M)		R57	VRD-RA2BE392J	J	3.9k 1/8W Carbon	AA
C3003	VCQYTA1HM123K	J	0.012 50V Mylar	AA	R201	VRS-CY1JF221J	J	220 1/16W M-Ox.	AA
			(20LK61M)		R202	VRS-CY1JF122J	J	1.2k 1/16W M-Ox.	AA
C3004	VCEA0A1HW105M	J	1.0 50V EL.	AB	R203	VRD-RA2BE682J	J	6.8k 1/8W Carbon	AA
			(20LK61M)		R204	VRS-CY1JF270J	J	27 1/16W M-Ox.	AA
C3005	VCEA0A1HW475M	J	4.7 50V EL.	AB	R205	VRD-RA2BE680J	J	68 1/8W Carbon	AA
			(20LK61M)		R206	VRD-RA2EE151J	J	150 1/4W Carbon	AA
C3006	VCEA0A1HW106M	J	10 50V EL.	AB	R207	VRD-RA2BE123J	J	12k 1/8W Carbon	AA
			(20LK61M)		R208	VRS-CY1JF332J	J	3.3k 1/16W M-Ox.	AA
C3007	VCEA0A1HW475M	J	4.7 50V EL.	AB	R209	VRS-CY1JF123J	J	12k 1/16W M-Ox.	AA
			(20LK61M)		R210	VRS-CY1JF104J	J	100k 1/16W M-Ox.	AA
C3008	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA	R211	VRS-CY1JF104J	J	100k 1/16W M-Ox.	AA
			(20LK61M)		R220	VRS-CY1JF331J	J	330 1/16W M-Ox.	AA
C3009	VCEA0A1CW227M	J	220 16V EL.	AC	R301	VRS-CY1JF102J	J	1.0k 1/16W M-Ox.	AA
			(20LK61M)		R302	VRS-CY1JF332J	J	3.3k 1/16W M-Ox.	AA
C3010	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB	R304	VRD-RA2BE102J	J	1.0k 1/8W Carbon	AA
			(20LK61M)					(20LK61M)	
C3011	VCEA0A1HW475M	J	4.7 50V EL.	AB	R305	VRS-CY1JF152J	J	1.5k 1/16W M-Ox.	AA
			(20LK61M)					(20LK61M)	
C3012	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB	R308	VRS-CY1JF333J	J	33k 1/16W M-Ox.	AA
			(20LK61M)					(20LK61M)	
C3013	VCKYCY1HB272K	J	2700p 50V Ceramic	AA	R353	VRD-RA2BE683J	J	68k 1/8W Carbon	AA
			(20LK61M)		R354	VRS-CY1JF103J	J	10k 1/16W M-Ox.	AA
C3014	VCQYTA1HM473K	J	0.047 50V Mylar	AB				(20LK31M)	
			(20LK61M)		R354	VRS-CY1JF822J	J	8.2k 1/16W M-Ox.	AA
C3015	VCSATA1CE335K	J	3.3 16V Tantalum	AC				(20LK61M)	
			(20LK61M)		R355	VRD-RA2BE223J	J	22k 1/8W Carbon	AA
C3016	VCE9GA1HW475M	J	4.7 50V EL.(N.P)	AB	R357	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
			(20LK61M)					(20LK61M)	
C3017	VCSATA1CE106K	J	10 16V Tantalum	AD	R357	VRD-RA2BE822J	J	8.2k 1/8W Carbon	AA
			(20LK61M)					(20LK31M)	
C3018	VCEA0A1HW105M	J	1.0 50V EL.	AB	R401	VRS-CY1JF470J	J	47 1/16W M-Ox.	AA
			(20LK61M)		R402	VRS-CY1JF470J	J	47 1/16W M-Ox.	AA
					R403	VRS-CY1JF470J	J	47 1/16W M-Ox.	AA
					R404	VRD-RA2BE102J	J	1.0k 1/8W Carbon	AA
					R410	VRS-CY1JF471J	J	470 1/16W M-Ox.	AA
					R411	VRS-CY1JF684J	J	680k 1/16W M-Ox.	AA

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code			
PWB-A: DUNTKA221WEV1 (20LK31M)					R752	VRD-RA2BE562J	J	5.6k 1/8W	Carbon	AA		
PWB-A: DUNTKA221WEV3 (20LK61M)					R754	VRS-CY1JF471J	J	470 1/16W	M-Ox.	AA		
MAIN UNIT (Continued)					△ R755	VRS-VV3LB270J	J	27 3.0W	M-Ox.	AB		
	R412	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox.	AA	R757	VRD-RA2BE472J	J	4.7k 1/8W	Carbon	AA
	R413	VRS-CY1JF152J	J	1.5k 1/16W	M-Ox.	AA	△ R758	VRS-SV2HC100J	J	10 1/2W	M-Ox.	AA
	R421	VRS-CY1JF223J	J	22k 1/16W	M-Ox.	AA	R763	VRD-RA2EE473J	J	47k 1/4W	Carbon	AA
△	R451	VRS-SV2HC103J	J	10k 1/2W	M-Ox.	AA	R771	VRS-VV3DB230J	J	33 2W	M-Ox.	AA
	R452	VRD-RA2BE152J	J	1.5k 1/8W	Carbon	AA	R801	VRD-RM2HD470J	J	47 1/2W	Carbon	AA
	R454	VRD-RA2BE334J	J	330k 1/8W	Carbon	AA	R807	VRS-CY1JF272J	J	2.7k 1/16W	M-Ox.	AA
	R455	VRD-RA2BE392J	J	3.9k 1/8W	Carbon	AA	R808	VRS-CY1JF272J	J	2.7k 1/16W	M-Ox.	AA
	R456	VRS-CY1JF273J	J	27k 1/16W	M-Ox.	AA	R809	VRS-CY1JF223J	J	22k 1/16W	M-Ox.	AA
	R457	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA	R810	VRS-CY1JF223J	J	22k 1/16W	M-Ox.	AA
	R458	VRD-RA2BE334J	J	330k 1/8W	Carbon	AA	R901	VRD-RA2BE101J	J	100 1/8W	Carbon	AB
	R460	VRD-RA2BE152J	J	1.5k 1/8W	Carbon	AA	R902	VRS-CY1JF750J	J	75 1/16W	M-Ox.	AA
	R461	VRS-CY1JF184J	J	180k 1/16W	M-Ox.	AA	R905	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox.	AA
	R462	VRS-CY1JF273J	J	27k 1/16W	M-Ox.	AA				(20LK61M)		
△	R511	VRN-SV2HB1R5J	J	1.5 1/2W	M-Film.	AB	R906	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox.	AA
	R512	VRS-VV3AB102J	J	1.0k 1W	M-Ox.	AA	R924	VRS-CY1JF104J	J	100k 1/16W	M-Ox.	AA
	R513	VRS-VV3AB102J	J	1.0k 1W	M-Ox.	AA				(20LK61M)		
	R514	VRD-RM2HD1R0J	J	1.0 1/2W	Carbon	AA	R925	VRS-CY1JF104J	J	100k 1/16W	M-Ox.	AA
	R515	VRS-VV3AB391J	J	390 1W	M-Ox.	AA	R961	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA
	R516	VRS-CY1JF153J	J	15k 1/16W	M-Ox.	AA	R962	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA
	R517	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox.	AA	R2001	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA
	R518	VRS-CY1JF333J	J	33k 1/16W	M-Ox.	AA	R2002	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA
	R519	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA	R2006	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA
	R520	VRD-RM2HD1R5J	J	1.5 1/2W	Carbon	AA	R2007	VRD-RA2BE223J	J	22k 1/8W	Carbon	AA
	R522	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA	R2008	VRD-RA2BE333J	J	33k 1/8W	Carbon	AA
	R523	VRD-RA2BE562J	J	5.6k 1/8W	Carbon	AA	R2009	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox.	AA
	R525	VRD-RA2BE272J	J	2.7k 1/8W	Carbon	AA	R2010	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA
	R527	VRD-RA2BE223J	J	22k 1/8W	Carbon	AA	R2011	VRD-RA2BE103J	J	10k 1/8W	Carbon	AA
	R602	VRD-RA2EE820J	J	82 1/4W	Carbon	AA	R2013	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox.	AA
△	R603	VRS-VV3LB220J	J	22 3.0W	M-Ox.	AB	R2014	VRD-RA2BE103J	J	10k 1/8W	Carbon	AA
	R605	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox.	AA	R2016	VRD-RA2BE223J	J	22k 1/8W	Carbon	AA
	R606	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA	R2017	VRD-RA2BE103J	J	10k 1/8W	Carbon	AA
	R608	VRD-RA2BE101J	J	100 1/8W	Carbon	AB	R2018	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA
	R609	VRD-RA2BE331J	J	330 1/8W	Carbon	AA	R2020	VRD-RA2BE223J	J	22k 1/8W	Carbon	AA
△	R610	VRS-VV3DB391J	J	390 2W	M-Ox.	AA	R2022	VRD-RA2BE333J	J	33k 1/8W	Carbon	AA
	R615	VRD-RM2HD332J	J	3.3k 1/2W	Carbon	AA	R2023	VRD-RA2BE223J	J	22k 1/8W	Carbon	AA
	R622	VRD-RA2BE222J	J	2.2k 1/8W	Carbon	AA	R2024	VRD-RA2BE682J	J	6.8k 1/8W	Carbon	AA
	R623	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA	R2025	VRD-RA2BE682J	J	6.8k 1/8W	Carbon	AA
	R624	VRN-RA2BK472F	J	4.7k 1/8W	M-Film.	AA	R2026	VRD-RA2BE682J	J	6.8k 1/8W	Carbon	AA
	R634	VRD-RM2HD151J	J	150 1/2W	Carbon	AA	R2027	VRD-RA2BE682J	J	6.8k 1/8W	Carbon	AA
	R635	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox.	AA	R2028	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA
	R636	VRD-RM2HD121J	J	120 1/2W	Carbon	AA	R2029	VRS-CY1JF102J	J	1.0k 1/16W	M-Ox.	AA
△	R641	VRS-VV3AB682J	J	6.8k 1W	M-Ox.	AA	R2032	VRD-RA2BE471J	J	470 1/8W	Carbon	AA
▲	R651	VRD-RM2HD1R0J	J	1.0 1/2W	Carbon	AA	R2033	VRD-RA2BE684J	J	680k 1/8W	Carbon	AA
▲	R654	VRD-RA2BE154J	J	150k 1/8W	Carbon	AA	R2034	VRS-CY1JF684J	J	680k 1/16W	M-Ox.	AA
▲	R655	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA	R2040	VRD-RA2BE102J	J	1.0k 1/8W	Carbon	AA
▲	R659	VRN-VV3AB2R2J	J	2.2 1W	M-Film.	AA	R2041	VRS-CY1JF333J	J	33k 1/16W	M-Ox.	AA
▲	R661	VRN-VV3ABR47J	J	0.47 1W	M-Film.	AA	R2042	VRD-RA2BE101J	J	100 1/8W	Carbon	AB
▲	R662	VRD-RA2BE102G	J	1.0k 1/8W	Carbon	AB	R2043	VRD-RA2BE101J	J	100 1/8W	Carbon	AB
△	R701	RR-DZ0047CEZZ	J	2.7M 1/2W	Carbon	AD	R2044	VRS-CY1JF683J	J	68k 1/16W	M-Ox.	AA
		or					R2045	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA
		RR-HZ0046CEZZ					R2047	VRS-CY1JF221J	J	220 1/16W	M-Ox.	AA
		or					R2048	VRD-RA2BE562J	J	5.6k 1/8W	Carbon	AA
		VRC-UB2HG275K					R2049	VRS-CY1JF333J	J	33k 1/16W	M-Ox.	AA
△	R702	VRW-KP3HC1R8K	J	1.8 5W	Cement	AC	R2060	VRS-CY1JF221J	J	220 1/16W	M-Ox.	AA
△	R703	VRS-KA3NG681J	J	680 7.0W	M-Ox.	AF	R2061	VRS-CY1JF562J	J	5.6k 1/16W	M-Ox.	AA
	R704	VRD-RM2HD123J	J	12k 1/2W	Carbon	AA	R2062	VRS-CY1JF183J	J	18k 1/16W	M-Ox.	AA
	R705	VRD-RA2EE334J	J	330k 1/4W	Carbon	AA	R2063	VRD-RA2BE222J	J	2.2k 1/8W	Carbon	AA
	R706	VRD-RM2HD470J	J	47 1/2W	Carbon	AA	R2064	VRD-RA2BE332J	J	3.3k 1/8W	Carbon	AA
△	R707	VRN-VV3DB1R5J	J	1.5 2W	M-Film.	AB	R2066	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA
△	R708	VRD-RM2HD824J	J	820k 1/2W	Carbon	AA	R2067	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA
△	R709	VRS-KA3NG681J	J	680 7.0W	M-Ox.	AF	R2068	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA
△	R711	VRS-KA3NG681J	J	680 7.0W	M-Ox.	AF	R2070	VRS-CY1JF103J	J	10k 1/16W	M-Ox.	AA
△	R717	VRS-KA3HG3R3K	J	3.3 5W	M-Ox.	AD	R2101	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA
△	R730	VRS-KA3HG8R2K	J	8.2 5W	M-Ox.	AD	R2102	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA
				(20LK61M)			R2201	VRD-RA2BE103J	J	10k 1/8W	Carbon	AA
	R731	VRD-RA2EE330J	J	33 1/4W	Carbon	AA	R2202	VRD-RA2BE473J	J	47k 1/8W	Carbon	AA
				(20LK61M)			R2203	VRS-CY1JF332J	J	3.3k 1/16W	M-Ox.	AA
△	R734	VRS-KA3NG330J	J	33 7.0W	M-Ox.	AE	R2211	VRD-RA2BE222J	J	2.2k 1/8W	Carbon	AA
				(20LK61M)			R2212	VRS-CY1JF682J	J	6.8k 1/16W	M-Ox.	AA
△	R736	VRS-VV3LB330J	J	33 3.0W	M-Ox.	AB	R2213	VRD-RA2BE223J	J	22k 1/8W	Carbon	AA
				(20LK31M)			R2401	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA
△	R750	VRS-VV3AB561J	J	560 1W	M-Ox.	AA	R2402	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA
				(20LK61M)			R2403	VRS-CY1JF101J	J	100 1/16W	M-Ox.	AA

Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTKA221WEV1 (20LK31M)				
PWB-A: DUNTKA221WEV3 (20LK61M)				
MAIN UNIT (Continued)				
R2404	VRS-CY1JF101J	J	100 1/16W M-Ox.	AA
R2501	VRS-CY1JF123J	J	12k 1/16W M-Ox.	AA
R2503	VRS-CY1JF273J	J	27k 1/16W M-Ox.	AA
R2504	VRS-CY1JF123J	J	12k 1/16W M-Ox.	AA
R2505	VRS-CY1JF563J	J	56k 1/16W M-Ox.	AA
R2506	VRS-CY1JF563J	J	56k 1/16W M-Ox.	AA
R2507	VRS-CY1JF823J	J	82k 1/16W M-Ox.	AA
R2508	VRS-CY1JF153J	J	15k 1/16W M-Ox.	AA
R2509	VRS-CY1JF272J	J	2.7k 1/16W M-Ox.	AA
R2601	VRD-RA2BE331J	J	330 1/8W Carbon	AA
R3001	VRD-RA2BE221J	J	220 1/8W Carbon	AA
			(20LK61M)	
R3002	VRD-RA2BE221J	J	220 1/8W Carbon	AA
			(20LK61M)	
R3003	VRS-CY1JF105J	J	1.0M 1/16W M-Ox.	AA
			(20LK61M)	
R3004	VRS-CY1JF104J	J	100k 1/16W M-Ox.	AA
			(20LK61M)	
R3005	VRS-CY1JF623J	J	62k 1/16W M-Ox.	AA
			(20LK61M)	
R3007	VRS-CY1JF332J	J	3.3k 1/16W M-Ox.	AA
			(20LK61M)	
R3008	VRS-CY1JF302J	J	3.0k 1/16W M-Ox.	AA
			(20LK61M)	
R3010	VRS-CY1JF392J	J	3.9k 1/16W M-Ox.	AA
			(20LK61M)	
R3011	VRS-CY1JF102J	J	1.0k 1/16W M-Ox.	AA
			(20LK61M)	
R3012	VRS-CY1JF102J	J	1.0k 1/16W M-Ox.	AA
			(20LK61M)	
R3373	VRD-RA2BE683J	J	68k 1/8W Carbon	AA
			(20LK61M)	
R3374	VRS-CY1JF822J	J	8.2k 1/16W M-Ox.	AA
			(20LK61M)	
R3375	VRD-RA2BE223J	J	22k 1/8W Carbon	AA
			(20LK61M)	
R3377	VRD-RA2BE103J	J	10k 1/8W Carbon	AA
			(20LK61M)	
SWITCHES				
S2501	QSW-K0202PEZZ	R	Power	AC
	or			
	QSW-K0079GEZZ			
S2502	QSW-K0202PEZZ	R	VOL-Down	AC
	or			
	QSW-K0079GEZZ			
S2503	QSW-K0202PEZZ	R	VOL-UP	AC
	or			
	QSW-K0079GEZZ			
S2504	QSW-K0202PEZZ	R	CH-Down	AC
	or			
	QSW-K0079GEZZ			
S2505	QSW-K0202PEZZ	R	CH-UP	AC
	or			
	QSW-K0079GEZZ			
MISCELLANEOUS PARTS				
△ RY701	RRLYU0041CEZZ	J	Relay	AG
	or			
	RRLYJ0077CEZZ			
	or			
	RRLYJ0090CEZZ			
△ F701	QFS-B4023CEZZ	J	Fuse, 4A (125V)	AC
	or			
	QFS-B4021GEZZ			
FB602	RBLN-0037CEZZ	J	Ferrite Bead	AB
FB603	RBLN-0037CEZZ	J	Ferrite Bead	AB
FH701	QFSHD1013CEZZ	J	Fuse Holder	AC
FH702	QFSHD1014CEZZ	J	Fuse Holder	AC
P302	QPLGN0461CEZZ	J	Plug, 4-pin (S)(20LK31M)	AB
P303	QPLGN0461CEZZ	J	Plug, 4-pin (S)(20LK61M)	AB
P401	QPLGN0561CEZZ	J	Plug, 5-pin (GBN)	AB

Ref. No.	Part No.	★	Description	Code
P601	QPLGN0660CEZZ	J	Plug, 6-pin (K)	AC
P651	QPLGN0361CEZZ	J	Plug, 3-pin (TP651-3)	AB
P701	QPLGN0260CEZZ	J	Plug, 2-pin (M)	AC
P751	QPLGN0461CEZZ	J	Plug, 4-pin (YBN)	AB
P901	QPLGN0561CEZZ	J	Plug, 5-pin (ED)	AB
P2001	QPLGN0561CEZZ	J	Plug, 5-pin (TP2001-5)	AB
RMC2601	RRMCU0232CEZZ	J	R/C Receiver	AG
RDA501	PRDAR0106GJFW	X	Heat Sink, for IC501	AF
RDA602	PRDAR0216PEFW	R	Heat Sink, for Q602	AE
RDA701	PRDAR0238PEFW	R	Heat Sink, for IC701	AN
TP701	QLUGP0102PEZZ	R	Lug	AA
	LX-BZ3049GEFD	J	Screw	AA
	LX-BZ3100CEFD	J	Screw	AA
	LX-TZ3004CEFD	J	Screw	AA
	PZETM0016CEZZ	J	Insulator	AB
	QCNW-2047PEZZ	R	Connecting Cord	AK

Ref. No.	Part No.	★	Description	Code	Ref. No.	Part No.	★	Description	Code
PWB-B: DUNTK9432WEW1 CRT UNIT					PWB-C: DUNTKA222WEV0 (20LK31M) PWB-C: DUNTKA222WEV2 (20LK61M) FRONT AV UNIT				
TRANSISTORS					MISCELLANEOUS PARTS				
Q852	VS2SC2229O/1E	J	2SC2229O	AD	J1001	QJAKE0150CEZZ	J	Jack, Video IN	AD
Q854	VS2SC2229O/1E	J	2SC2229O	AD	J1002	QJAKE0185CEZZ	J	Jack, Audio IN (L)	AE
Q856	VS2SC2229O/1E	J	2SC2229O	AD	J1003	QJAKE0192CEZZ	X	Jack, Audio IN (R) (20LK61M)	AD
Q881	VS2SA1266-Y-1	J	2SA1266 (Y)	AA	P1001	QPLGN0561CEZZ	J	Plug, 5-pin (ED)	AB
	or								
	VS2SA1015-Y-1								
DIODES									
D881	RH-DX0475CEZZ	J	Diode	AB					
D882	RH-DX0475CEZZ	J	Diode	AB					
D885	RH-DX0475CEZZ	J	Diode	AB					
COIL									
L851	VP-DF820K0000	J	Peaking 82μH	AB					
CAPACITORS									
	<i>[EL... Electrolytic]</i>								
C851	VCCCPA1HH151J	J	150p 50V Ceramic	AA					
C852	VCCCPA1HH151J	J	150p 50V Ceramic	AA					
C853	VCCCPA1HH151J	J	150p 50V Ceramic	AA					
C854	RC-KZ0160GEZZ	J	0.01 250V Ceramic	AC					
C881	VCEA0A1CW106M	J	10 16V EL.	AB					
C883	VCEA0A1CW336M	J	33 16V EL.	AB					
RESISTORS									
	<i>[M-Ox... Metal Oxide]</i>								
R852	VRD-RA2BE181J	J	180 1/8W Carbon	AA					
R853	VRD-RA2BE121J	J	120 1/8W Carbon	AA					
R854	VRD-RA2BE470J	J	47 1/8W Carbon	AA					
R855	VRD-RA2BE470J	J	47 1/8W Carbon	AA					
△ R857	VRS-VV3AB123J	J	12k 1W M-Ox.	AA					
R858	VRD-RM2HD332J	J	3.3k 1/2W Carbon	AA					
R859	VRD-RA2BE470J	J	47 1/8W Carbon	AA					
R860	VRD-RA2BE121J	J	120 1/8W Carbon	AA					
R861	VRD-RA2BE181J	J	180 1/8W Carbon	AA					
△ R865	VRS-VV3AB123J	J	12k 1W M-Ox.	AA					
R866	VRD-RM2HD332J	J	3.3k 1/2W Carbon	AA					
R868	VRD-RA2BE181J	J	180 1/8W Carbon	AA					
R869	VRD-RA2BE121J	J	120 1/8W Carbon	AA					
△ R873	VRS-VV3AB123J	J	12k 1W M-Ox.	AA					
R874	VRD-RM2HD332J	J	3.3k 1/2W Carbon	AA					
R881	VRD-RA2BE102J	J	1.0k 1/8W Carbon	AA					
R882	VRD-RA2BE391J	J	390 1/8W Carbon	AA					
R883	VRD-RA2BE561J	J	560 1/8W Carbon	AA					
R884	VRD-RA2BE152J	J	1.5k 1/8W Carbon	AA					
R885	VRD-RA2BE470J	J	47 1/8W Carbon	AA					
MISCELLANEOUS PARTS									
P851	QPLGN0561CEZZ	J	Plug, 5-pin (GBN)	AB					
P852	QPLGN0461CEZZ	J	Plug, 4-pin (YBN)	AB					
SC851	QSOCV0840CEZZ	J	CRT Socket	AK					

Ref. No.	Part No.	★	Description	Code
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MISCELLANEOUS PARTS

△	ACC701	QACCD3064CESA	J	AC Cord	AM
		or			
		QACCD3060CESA			
		or			
		QACCD3090CESA			
SP1	VSP9050PB25WA	J	Speaker, 16 ohm (L) (20LK31M)	AM	
SP1	VSP9050PB50YA	X	Speaker, 16 ohm (L) (20LK61M)	AK	
SP2	VSP9050PB25WA	J	Speaker, 16 ohm (R) (20LK31M)	AM	
SP2	VSP9050PB50YA	X	Speaker, 16 ohm (R) (20LK61M)	AK	
	LHLDK0012PEZZ	R	AC Cord Holder	AC	
	LHLDZ0063PEZZ	R	Anode Clamp	AD	
	QCNW-2011PEZZ	R	Connecting Cord	AH	
	QCNW-2047PEZZ	R	Connecting Cord (20LK61M)	AK	
	QCNW-2111PEZZ	R	Connecting Cord	AF	
	QCNW-2160PEZZ	R	Connecting Cord	AG	
	XTASD40P16000	J	Screw	AA	
	XTASD40P20000	J	Screw	AA	

Ref. No.	Part No.	★	Description	Code
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PACKING PARTS (NOT REPLACEMENT ITEM)

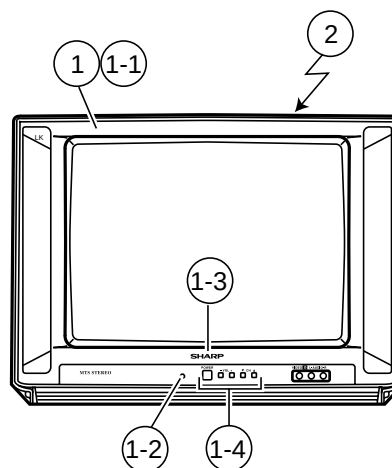
SPAKC0134GJZZ	–	Packing Case (20LK31M)	—
SPAKC0135GJZZ	–	Packing Case (20LK61M)	—
SPAKP0102GJZZ	–	Polyethylene Foam Wrap	—
SPAKX0002GJZZ	–	Buffer Material	—
SSAKA0101GJZZ	–	Polyethylene Bag	—

CABINET PARTS

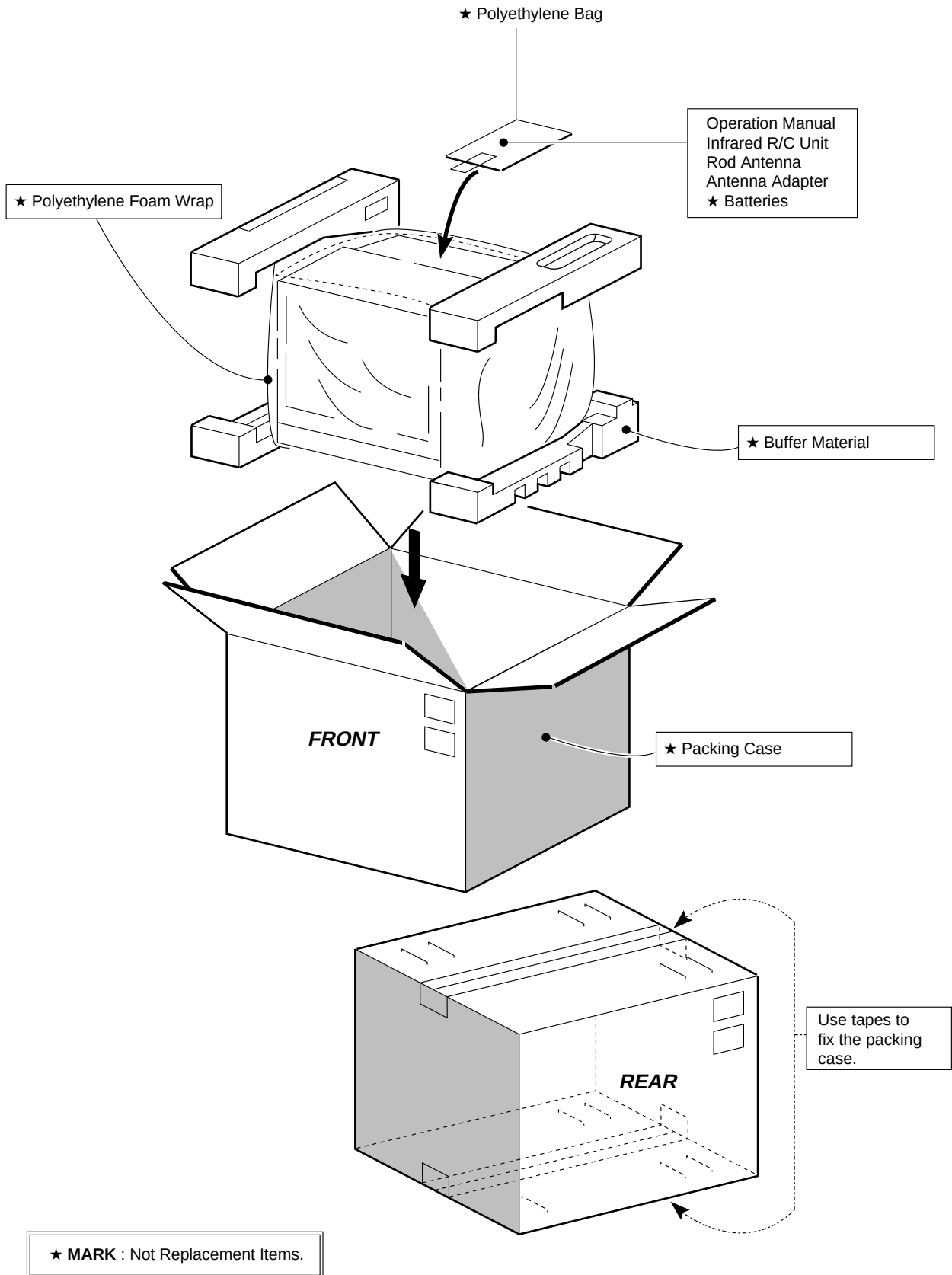
1	CCABA0110WEH0	X	Front Cabinet Ass'y (20LK31M)	BB
1	CCABA0111WEH0	X	Front Cabinet Ass'y (20LK61M)	BA
1-1	Not Available	–	Front Cabinet	—
1-2	GCOVA0002GJSA	X	Cover for R/C	AL
1-3	HBDGB0019PESB	R	Badge, "SHARP"	AD
1-4	JBTN-0002GJSC	X	Button, Power Vol-up/down, CH-up/down	
2	GCABB0002GJKA	X	Rear Cabinet	AW

SUPPLIED ACCESSORIES

QANTR0018PEZZ	R	Rod Antenna	AQ
RRMCG1339CESB	X	Infrared R/C Unit	AQ
RUNTK0165CEZZ	J	Antenna Adapter	AM
TiNS-7056GJZZ	X	Operation Manual (20LK31M)	AL
TiNS-7057GJZZ	X	Operation Manual (20LK61M)	AL



PACKING OF THE SET



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